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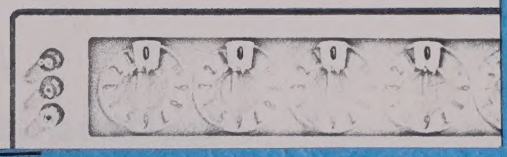
DC 57



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Instruction Sheet

DC 57 DEKAPACITOR® decade capacitor

Electro Scientific Industries, Inc.

13900 N.W. SCIENCE PARK DRIVE / PORTLAND, OREGON 97229 / U.S.A.

August 1966

description

The Model DC57 DEKAPACITOR Decade Capacitor is an adjustable, low-loss capacitance standard. It consists of four decades of switched precision fixed capacitors and a single variable air capacitor for fine interpolation. Each decade can be set from 0 to 10 times the step capacitance, which allows 10% overlap. The variable air capacitor has an overlap of 20% of one step of the adjacent decade.

All fixed capacitors are polystyrene-dielectric components. Polystyrene was chosen for the dielectric because of its low leakage, excellent mechanical stability, and low dissipation factor. Both the dissipation factor and dielectric constant are essentially independent of frequency.

specifications

Accuracy: ±(1.0% + 5 pF) after correction for zero capacitance.

Number of Decades: Four, plus interpolating variable air capacitor.

Range: 1.111120 μF.

Resolution: Continuous.

Typical Dissipation Factor: 0.0001 to 0.0002.

Voltage Rating: 500 WVDC.

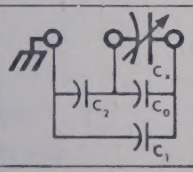
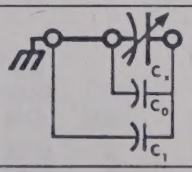
Temperature Coefficient: -(120 ± 30) ppm/°C.

Dielectric Absorption: Less than 0.1%.

Insulation Resistance: Greater than 10^{12} Ω under normal conditions.

Dimensions: Width 15.8 in. (40.2 cm), height 4.3 in. (10.9 cm), depth 4.9 in. (12.4 cm).

Weight: 4.5 lb (2.2 kg).

	UNGROUNDED CONDITION	GROUNDED CONDITION
EQUIVALENT CIRCUIT		
ACCURACY OF DIAL READING	C_x ±(1%+3pF)	C_x ±(1%+5pF)
APPROXIMATE RESIDUAL CAPACITANCES DC 57	C_0: 25pF C_1: 25pF C_2: 75pF	C_0+C_1 : 50pF

Note that the dial reading refers to C_x only and does not include the residual capacitances.

operation

The Model DC 57 DEKAPACITOR can be used as a two-terminal or three-terminal capacitor.

Three binding posts on the front panel allow grounded and ungrounded two-terminal operation and grounded or guarded three-terminal operation. Typical residual capacitances are shown in the diagram to the left.

The switching of the instrument selects parallel combinations of capacitors that have values in the ratios 1, 2, 3, 4. Each capacitor can be selected to be calibrated alone by setting the switch to 1, 2, 3, or 4. Corrections for values 5 to 10 can be calculated from calibration of the first four values.

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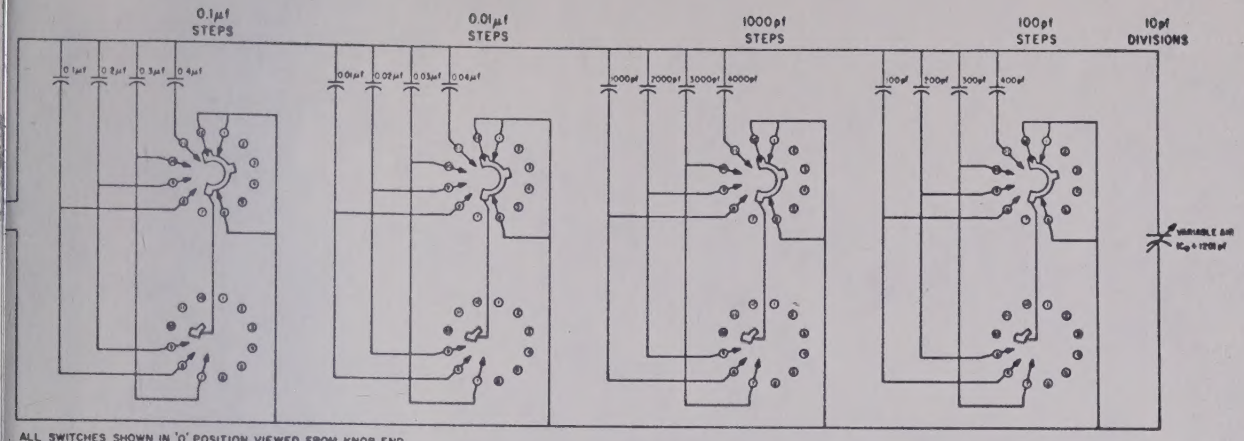
Part No. 8897



MODEL DC 57 SCHEMATIC DIAGRAM

aintenance

odic maintenance of the Model DC 57 is neither required recommended. The switches are lubricated at the time anufacture and should not be cleaned or lubricated unit has been determined that they are not making good trical contact. In such a case, proceed as follows:

pply solvent (Freon printed circuit solvent or equivaent) to contact surfaces with small brush or pipe cleaner.
ry with low-pressure air.
pply thin coating of lubricant (Oak 2008 or equivalent) contact surfaces with hypodermic needle.
emove excess oil with clean, dry cloth and remove all aces of lint with soft brush.

calibration

To calibrate the instrument, measure the capacitance of each capacitor with an impedance bridge of 0.2% accuracy or better. ESI Model 250DE is recommended for this use. The procedure is as follows:

1. Set all dials to 0 and measure the zero capacitance.
2. Set the interpolating variable capacitor to each of its major divisions, 2, 4, 6, 8, 10 and 12 on each side of the dial. Measure capacitances at these settings.
3. Set each dial to 1, 2, 3 and 4 in turn and measure the capacitance at each setting with all other dials set to 0.

placement parts

ollowing table lists replacement parts alphabetically by e of part. All parts listed herein are manufactured by or are available from Electro Scientific Industries and be ordered from the factory. When ordering parts, ine the following information:

Model and serial number of the instrument
ESI part number and description of part

ufacturers Federal Stock Code (FSC) for Electro Scien- Industries, Inc. is 11837.

DESCRIPTION	ESI PART NO.	QTY USED
ing Post, 0.75 inches long	1393	3
Binding Post, Black	1170	2
Binding Post, Gold Plated	1172	1
citor Switch Assembly, 0.1 μf STEPS	7689	1
including-		
apacitor, 100 nF	1412	1
apacitor, 200 nF	1413	1
apacitor, 300 nF	1414	1
apacitor, 400 nF	1415	1
Capacitor Switch Assembly, 0.01 μf STEPS	7690	1
-including-		
Capacitor, 10 nF	1408	1
Capacitor, 20 nF	1409	1
Capacitor, 30 nF	1410	1
Capacitor, 40 nF	1411	1
Capacitor Switch Assembly, 1000 pf STEPS	7691	1
-including-		
Capacitor, 1 nF	1404	1
Capacitor, 2 nF	1405	1
Capacitor, 3 nF	1406	1
Capacitor, 4 nF	1407	1
Capacitor Switch Assembly, 100 pf STEPS	7692	1
-including-		
Capacitor, 100 pF	1420	1
Capacitor, 200 pF	1421	1
Capacitor, 300 pF	1422	1
Capacitor, 400 pF	1423	1
Capacitor, Variable, 10 pf DIVISIONS	7488	1
Dial with Knob, First through Fourth	7524	4
Dial with Knob, Fifth	7491	1
Dust Cover	7398	1

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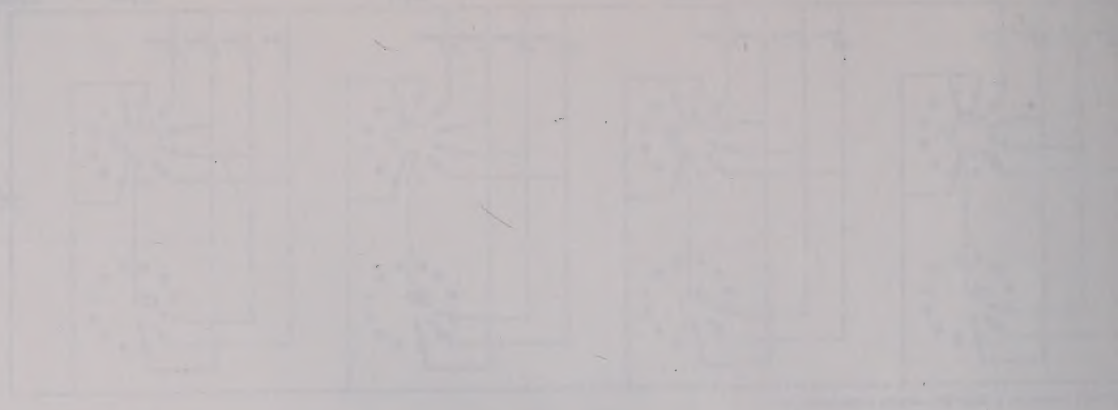

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